

PATENT COOPERATION TREATY

REC'D 16 DEC 2005

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WRITTEN OPINION OF THE INTERNATIONAL SEARCHING AUTHORITY

(PCT Rule 43bis.1)

From the
INTERNATIONAL SEARCHING AUTHORITY

To:
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Date of mailing
(day/month/year) **12 DEC 2005**

Applicant's or agent's file reference

FOR FURTHER ACTION

See paragraph 2 below

SLRE.103401/

International application No.

International filing date (day/month/year)

Priority date (day/month/year)

PCT/US04/26851

18 August 2004 (18.08.2004)

22 August 2003 (22.08.2003)

International Patent Classification (IPC) or both national classification and IPC

IPC(7): A01N 37/10, 43/12, 43/38, 43/90 and US Cl.: 504/241, 284, 297, 321, 323

Applicant

STOLLER ENTERPRISES, INC.

1. This opinion contains indications relating to the following items:

- ☒ Box No. I Basis of the opinion
- ☐ Box No. II Priority
- ☐ Box No. III Non-establishment of opinion with regard to novelty, inventive step and industrial applicability
- ☐ Box No. IV Lack of unity of invention
- ☒ Box No. V Reasoned statement under Rule 43bis.1(a)(i) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement
- ☐ Box No. VI Certain documents cited
- ☐ Box No. VII Certain defects in the international application
- ☐ Box No. VIII Certain observations on the international application

2. FURTHER ACTION

If a demand for international preliminary examination is made, this opinion will be considered to be a written opinion of the International Preliminary Examining Authority ("IPEA") except that this does not apply where the applicant chooses an Authority other than this one to be the IPEA and the chosen IPEA has notified the International Bureau under Rule 66.1bis(b) that written opinions of this International Searching Authority will not be so considered.

If this opinion is, as provided above, considered to be a written opinion of the IPEA, the applicant is invited to submit to the IPEA a written reply together, where appropriate, with amendments, before the expiration of 3 months from the date of mailing of Form PCT/ISA/220 or before the expiration of 22 months from the priority date, whichever expires later.

For further options, see Form PCT/ISA/220.

3. For further details, see notes to Form PCT/ISA/220.

Name and mailing address of the ISA/ US
Mail Stop PCT, Attn: ISA/US
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Date of completion of this opinion
23 November 2005 (23.11.2005)

Authorized officer

S. Mark Clardy

Telephone No. 571-272-1600

**WRITTEN OPINION OF THE
INTERNATIONAL SEARCHING AUTHORITY**

International application No.
PCT/US04/26851

Box No. I Basis of this opinion

1. With regard to the **language**, this opinion has been established on the basis of:

- ☒ the international application in the language in which it was filed
☐ a translation of the international application into _____, which is the language of a translation furnished for the purposes of international search (Rules 12.3(a) and 23.1(b)).

2. With regard to any **nucleotide and/or amino acid sequence** disclosed in the international application and necessary to the claimed invention, this opinion has been established on the basis of:

a. type of material

- ☐ a sequence listing
☐ table(s) related to the sequence listing

b. format of material

- ☐ on paper
☐ in electronic form

c. time of filing/furnishing

- ☐ contained in the international application as filed.
☐ filed together with the international application in electronic form.
☐ furnished subsequently to this Authority for the purposes of search.

3. ☐ In addition, in the case that more than one version or copy of a sequence listing and/or table(s) relating thereto has been filed or furnished, the required statements that the information in the subsequent or additional copies is identical to that in the application as filed or does not go beyond the application as filed, as appropriate, were furnished.

4. Additional comments:

**WRITTEN OPINION OF THE
INTERNATIONAL SEARCHING AUTHORITY**

International application No. PCT/US04/26851

Box No. V Reasoned statement under Rule 43 bis.1(a)(i) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

1. Statement

Novelty (N)	Claims <u>1-77</u>	YES
	Claims <u>NONE</u>	NO
Inventive step (IS)	Claims <u>NONE</u>	YES
	Claims <u>1-77</u>	NO
Industrial applicability (IA)	Claims <u>1-77</u>	YES
	Claims <u>NONE</u>	NO

2. Citations and explanations:

Claims 1-77 lack an inventive step under PCT Article 33(3) as being obvious over Coenen et al. (*Trends in Plant Science*, 2(9):351-356), Mohr et al. (*Plant Physiology*, P. 383-408), Bernier et al (*The Plant Cell*, 5:1147-1155), and Lin et al (US 6,361,999).

Coenen et al teach that auxin-cytokinin interactions in plants control many aspects of growth and differentiation (abstract) and that increases in one affect the concentration of the other (p 351-352; Figure 2). The two hormones affect cell cycle control (p. 353-354).

Mohr et al teach the effects of various known plant hormones including auxin (p. 386-389), gibberellins (389-393), and cytokinins (393-395), among others. Each of these is involved in growth characteristics of plants such as growth of roots, internode length, top growth, and plant structure.

Bernier et al teach that, in addition to their effects on plant growth, cytokinin and auxin each have an effect on flowering (p. 1149-1150), thus control of these two hormones would have a controlling effect on flowering, as well as plant growth characteristics.

Lin et al teach the utility of applying analogs (see figures 2-7 and columns 3-4) of plant hormones such as auxin and cytokinins (col 1) to plants (including seeds: col 6, lines 65-67) for controlling plant growth. The effects of varying the ratio of cytokinin and auxin in potato and tobacco is also discussed (columns 8-9).

One of ordinary skill in the art would be motivated to combine these references in order to determine the known effects of plant hormones, in particular auxin and cytokinin, and how they interact to affect plant growth and physiology.

Thus it would have been *prima facie* obvious to the ordinary artisan at the time the invention was made to have applied plant hormones such as auxins, cytokinins, and gibberellins to plants because the prior art discloses that exogenous application of these hormones may be used to control various aspects of plant growth, including top growth, internode length, plant structure, and flowering. Determination of appropriate application rates is within the skill level of the ordinary artisan.

Claims 1-77 meet the criteria set out in PCT Article 33(4), and thus possess industrial applicability because the subject matter claimed can be made or used in industry.